

CLAIMS

1. A process for the production of a personalised, optically variable element (51) having polarising properties, characterised in that to produce the optically variable element (51) a film body (3, 6, 8) which comprises two or more layers and which has an LCP layer (32, 65, 85) comprising a liquid crystal material is applied to a substrate body (4, 7, 9) which has an orientation layer (41, 75, 96) for the orientation of liquid crystals, that the orientation layer (41, 75, 96) of the substrate body (4, 7, 9) is personalised prior to application of the film body to the substrate body, and that the film body (3, 6, 8) is applied to the personalised orientation layer (41, 75, 96) of the substrate body (4, 7, 9) in such a way that the LCP layer (32, 65, 85) of the film body (3, 6, 8) lies on the personalised orientation layer of the substrate body for the orientation of liquid crystals of the LCP layer of the film body.
2. A process according to claim 1 characterised in that the orientation layer (41) of the substrate body (4) is personalised by partial printing (43) on the orientation layer.
3. A process according to one of the preceding claims characterised in that the orientation layer (41) of the substrate body (4) is personalised by partial transfer of a differently oriented orientation layer (48) on to the orientation layer (41) of the substrate body (4).
4. A process according to one of the preceding claims characterised in that the orientation layer of the substrate body is personalised by partial mechanical removal of the orientation layer.
5. A process according to one of the preceding claims characterised in that the orientation layer of the substrate body is personalised by partial thermal deformation of the orientation layer.

6. A process according to one of the preceding claims characterised in that the orientation layer of the substrate body is personalised by replication of a relief structure into the orientation layer.
7. A process according to one of the preceding claims characterised in that the orientation layer of the substrate body is personalised by exposure of the orientation layer.
8. A process according to one of the preceding claims characterised in that alignment of the liquid crystal material of the LCP layer (32) of the film body (3) is effected at the personalised orientation layer (41) of the substrate body (4) and that the aligned liquid crystal material of the LCP layer (32) is then fixed.
9. A process according to claim 8 characterised in that the LCP layer (32) of the film body (3) is heated after application of the film body (3) to the substrate body (4) for alignment of the liquid crystals.
10. A process according to one of the preceding claims characterised in that a stamping film, laminating film or sticker film is used as the substrate body (71, 9).
11. A process according to claim 10 characterised in that the stamping film, laminating film or sticker film forming the substrate body (71) is applied to a security document (72) prior to application of the film body (6) to the substrate body (71).
12. A process according to one of claims 1 to 9 characterised in that the substrate body (4, 7) has a carrier layer (42, 72) forming a security document.

13. A process according to one of the preceding claims characterised in that the film body (3, 6, 8) used is a stamping film, laminating film or sticker film which is applied to the substrate body (4, 7, 9) in a hot stamping or laminating process.

14. A film system comprising a substrate body (4, 7, 9) and a film body (3, 6, 8) for providing a personalised, optically variable element (51) having polarising properties,

characterised in that

the film body (3, 6, 8) of the film system comprises two or more layers and has an LCP layer (32, 65, 85) comprising a liquid crystal material, that the substrate body (4, 7, 9) of the film system has an orientation layer (41, 75, 96) for the orientation of liquid crystals and that the film body (3, 6, 8) after personalisation of the orientation layer (41, 75, 96) of the substrate body (4, 7, 9) is applied to the personalised orientation layer (41, 75, 96) of the substrate body (4, 7, 9) in such a way that the LCP layer (32, 65, 85) of the film body (3, 6, 8) lies on the personalised orientation layer (41, 75, 96) of the substrate body (4, 7, 9) for the orientation of liquid crystals of the LCP layer (32, 65, 85) of the film body (3, 6, 8).

15. A film system according to claim 14 characterised in that the orientation layer of the substrate body has UV-functional groups for better adhesion of the film body to the substrate body.

16. A film system according to one of claims 14 and 15 characterised in that the film body (3, 6, 8) has a carrier layer (31, 61, 81) and a physically dried LCP layer (32, 65, 85).

17. A film system according to one of claims 14 to 16 characterised in that the substrate body (7, 9) has one or more further layers (76, 77, 94) which generate optical security features.

18. A film system according to one of claims 14 to 17 characterised in that the film body (6, 8) has one or more further layers (68, 83, 84) which generate optical security features.

19. A film system according to one of claims 14 to 18 characterised in that the substrate body (7, 9) and the film body (7, 8) each have one or more further layers which generate mutually supplemental optical security features.

20. A film system according to one of claims 14 to 19 characterised in that the substrate body and/or the part of the film body forming a part of the optically variable element has a retarder layer which has polarising properties.